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TE Comps A

Batch C

Program

```
1 find_max(X, Y, X) :- X >= Y, !.  
2 find_max(X, Y, Y) :- X < Y.  
3  
4 find_min(X, Y, X) :- X <= Y, !.  
5 find_min(X, Y, Y) :- X > Y.
```



find_max(100,200,Max).

Max = 200


?- find_max(100,200,Max).

Examples History Solutions

☐ table results Run!

Program

```
1 series(R1,R2,Re) :- Re is R1 + R2.  
2 parallel(R1,R2,Re) :- Re is ((R1 * R2) / (R1 + R2)).
```




parallel(10,40,R3).

R3 = 8

?- parallel(10,40,R3).


Examples History Solutions


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 Program

```

1 female(pam).
2 female(liz).
3 female(pat).
4 female(ann).
5 male(jim).
6 male(bob).
7 male(tom).
8 male(peter).
9 parent(pam,bob).
10 parent(tom,bob).
11 parent(tom,liz).
12 parent(bob,ann).
13 parent(bob,pat).
14 parent(pat,jim).
15 parent(bob,peter).
16 parent(peter,jim).
17 mother(X,Y):- parent(X,Y),female(X).
18 father(X,Y):- parent(X,Y),male(X).
19 haschild(X):- parent(X,_).
20 sister(X,Y):- parent(Z,X),parent(Z,Y),female(X),X\==Y.
21 brother(X,Y):-parent(Z,X),parent(Z,Y),male(X),X\==Y.
    
```



 mother(X,jim).


X = pat

Next 10 100 1,000 Stop

?- mother(X,jim).


Examples History Solutions


☐ table results Run!

 Program

```

3 female(pat).
4 female(ann).
5
6 male(jim).
7 male(bob).
8 male(tom).
9 male(peter).
10
11 parent(pam,bob).
12 parent(tom,bob).
13 parent(tom,liz).
14 parent(bob,ann).
15
16 parent(bob,pat).
17 parent(pat,jim).
18 parent(bob,peter).
19 parent(peter,jim).
20
21 mother(X,Y):- parent(X,Y),female(X).
22 father(X,Y):-parent(X,Y),male(X).
23 sister(X,Y):-parent(Z,X),parent(Z,Y),female(X),X\==Y.
24 brother(X,Y):-parent(Z,X),parent(Z,Y),male(X),X\==Y.
25 grandparent(X,Y):-parent(X,Z),parent(Z,Y).
26 grandmother(X,Z):-mother(X,Y),parent(Y,Z).
27 grandfather(X,Z):-father(X,Y),parent(Y,Z).
28 wife(X,Y):-parent(X,Z),parent(Y,Z),female(X),male(Y).
29 uncle(X,Z):-brother(X,Y),parent(Y,Z).
    
```



 grandmother(X,ann).


X = pam

Next 10 100 1,000 Stop

?- grandmother(X,ann).


Examples History Solutions

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Program

```
1 fib(0, 1) :-  
2   !.  
3 fib(N, F) :-  
4   fib(1, N, 1, 1, F).  
5  
6 fib(N, N, _, F, F) :-  
7   !.  
8 fib(N0, N, F0, F1, F) :-  
9   N1 is N0 + 1,  
10  F2 is F0 + F1,  
11  fib(N1, N, F1, F2, F).
```

 (fib(5, Fib)).


Fib = 8


?- (fib(5, Fib)).

Examples History Solutions

☐ table results


Run!

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Program

```
1 bigger(elephant, horse).  
2 bigger(horse, donkey).  
3 bigger(donkey, dog).  
4 bigger(donkey, monkey).
```

 bigger(elephant, horse).


true

?- bigger(elephant, horse).

Examples History Solutions

☐ table results

Run!

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Program

```
1 food(burger).
2 food(sandwich).
3 food(pizza).
4 lunch(sandwich).
5 dinner(pizza).
6
7 meal(X) :- food(X).
8
```



meal(X), lunch(X).


X = sandwich

Next 10 100 1,000 Stop

?- meal(X), lunch(X).

Examples History Solutions

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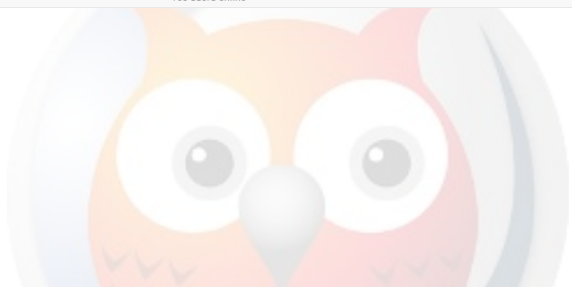
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634

Program

```
1 studies(charlie, csc135).
2 studies(olivia, csc135).
3 studies(jack, csc131).
4 studies(arthur, csc134).
5 teaches(kirke, csc135).
6 teaches(collins, csc131).
7 teaches(collins, csc171).
8 teaches(juniper, csc134).
9
10 professor(X, Y) :-
11 teaches(X, C), studies(Y, C).
```




studies(charlie, What).

What = csc135

?- studies(charlie, What).


Examples History Solutions

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 Program

```
1 owns(jack, car(bmw)).
2 owns(john, car(chevy)).
3 owns(olivia, car(civic)).
4 owns(jane, car(chevy)).
5 sedan(car(bmw)).
6 sedan(car(civic)).
7 truck(car(chevy))
8
9 professor(X, Y) :-
10 teaches(X, C), studies(Y, C).
```




owns(john, X).

0: Syntax error: Operator expected
X = car(chevy)

?- owns(john, X).


Examples History Solutions

☐ table results Run!

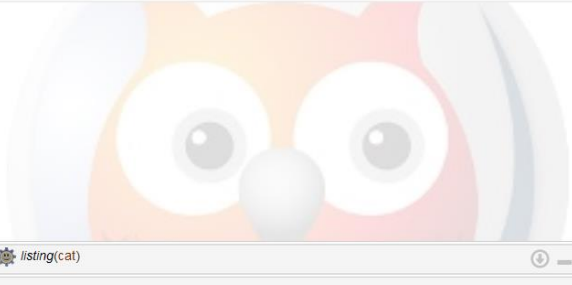
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 Program

```
1 cat(fubby).
2 black_spots(fubby).
3 dog(figaro).
4 white_spots(figaro).
5 owns(mary, Pet):- cat(Pet), black_spots(Pet).
6 loves(who, what):- owns(who, what).
7
```



listing(cat)

cat(fubby).

true

?- listing(cat)

Examples History Solutions

☐ table results Run!